

Enclosure 1
Request to Amend Hermes Test Reactor Construction Permit CPTR-6
(Non-Proprietary)

1 INTRODUCTION

Pursuant to 10 CFR 50.90, Kairos Power, LLC (Kairos Power) requests an amendment to Construction Permit CPTR-6 for the Hermes Test Reactor facility (Reference 1) to extend the latest date for the completion of construction of the facility.

Kairos Power requests that the NRC approve this amendment request by October 30, 2026, to allow for the continued construction of the Hermes Test Reactor facility.

2 DESCRIPTION OF PROPOSED CHANGE

Kairos Power requests to amend Construction Permit CPTR-6 to extend the latest date for completion of construction of the Hermes Test Reactor facility indicated in Construction Permit paragraph 3.A to April 30, 2029. The extension request is the result of developmental delays associated with the first of a kind nature of the Hermes Test Reactor facility design and construction.

3 REGULATORY EVALUATION

The proposed change has been evaluated to determine whether applicable regulations and requirements continue to be met.

As stated in Construction Permit CPTR-6, Paragraph 3, the Hermes Test Reactor facility construction permit is deemed to contain and be subject to the conditions specified in 10 CFR 50.55, "Conditions of construction permits, early site permits, combined licenses, and manufacturing licenses." 10 CFR 50.55(b) addresses construction permit expiration and extension of the completion date.

- 10 CFR 50.55(b) If the proposed construction or modification of the facility is not completed by the latest completion date, the construction permit shall expire and all rights are forfeited. However, upon good cause shown, the Commission will extend the completion date for a reasonable period of time. The Commission will recognize, among other things, developmental problems attributable to the experimental nature of the facility or fire, flood, explosion, strike, sabotage, domestic violence, enemy action, an act of the elements, and other acts beyond the control of the permit holder, as a basis for extending the completion date.

Since the issuance of the construction permit, Kairos Power has been progressing the design and construction of the Hermes Test Reactor facility at a deliberately measured pace in recognition of the first-of-kind nature of this project. In addition to being the first iteration of Kairos Power's fluoride salt-cooled, high temperature reactor (KP-FHR) design, the Hermes Test Reactor facility project includes the use of several design features and construction techniques that are first-of-a-kind for a nuclear construction project. As part of Kairos Power's approach to Hermes Test Reactor facility design and construction, a number of non-nuclear demonstration activities for these first-of-a-kind nuclear construction techniques and design features have been undertaken prior to performing the corresponding Hermes nuclear construction activities. These non-nuclear demonstration activities have allowed Kairos Power to exercise our and our partners' processes under conditions that approximate those expected during nuclear construction, identify key lessons learned and construction challenges, and make changes to the Hermes for-construction design and construction processes to improve constructability of the Hermes design. While performing non-nuclear demonstrations for first-of-a-kind

construction activities and design features has increased the Hermes Test Reactor facility construction timeline, Kairos Power has recognized the importance of these activities to retire risks associated with the design and construction of a first-of-a-kind facility, to successfully construct the Hermes Test Reactor facility, and to inform design and construction decisions for future KP-FHR facilities.

Kairos Power has completed site preparation work that included the removal of legacy structures from the Hermes Test Reactor footprint that required extensive coordination between Kairos Power, our partners, and the Department of Energy. This work required significantly more schedule than was originally anticipated. Kairos Power has also completed the construction of the Hermes foundation drilled piers, a first-of-a-kind evolution for a nuclear construction project. Kairos Power is making continued progress in the next phases of the Hermes Test Reactor facility design and construction.

Kairos Power has performed a review of the Hermes Test Reactor facility construction schedule and has developed a revised estimate of the time and resources necessary to complete the facility. Kairos Power has identified the need to extend the latest date for completion of construction. Kairos Power expects the construction of Hermes to be completed in 2028. Accordingly, and with conservatism that is necessary and prudent when requesting such an extension, Kairos Power requests a change to the latest date for completion of construction of the facility to April 30, 2029.

In accordance with 10 CFR 50.55(b), Kairos Power has shown good cause and requested a reasonable time period for the extension of the latest date for completion of construction of the facility.

Kairos Power does not request or propose any modifications to the construction permit other than to extend the latest date for completion of construction. The extension of the construction completion date does not authorize any new activities and does not have any radiological consequences.

4 ENVIRONMENTAL CONSIDERATION

Extension of the latest date for completion of construction of the Hermes Test Reactor facility does not affect the environmental impacts of operating and decommissioning the Hermes Test Reactor facility as described in NUREG-2263, "Environmental Impact Statement for the Construction Permit for the Kairos Hermes Test Reactor – Final Report" (Reference 2). Environmental impacts of construction may be affected, but this effect is limited to the extended duration of construction activities. The environmental impact of construction, as described in NUREG-2263, is expected to remain small for each resource area based on the following:

- Land Use and Visual Resources – The extended duration of construction does not alter the land usage on the Hermes site or visual character of the project; therefore, the impacts on Land Use and Visual Resources during construction remain SMALL.
- Air Quality and Noise – The extended duration of construction does not alter the annual estimates of air pollutants during construction, the mitigation measures in place to reduce impacts on air quality, or the considerations related to noise emissions during construction; therefore, the impacts on Air Quality and Noise during construction remain SMALL.
- Hydrogeology and Water Resources – The extended duration of construction does not alter the Hermes site geological environment or the considerations related to groundwater or surface water; therefore, the impacts on Hydrogeology and Water Resources during construction remain SMALL.

- Ecological Resources – The extended duration of construction does not alter considerations related to ecological resources; therefore, the impacts on Ecological Resources during construction remain SMALL.
- Historic and Cultural Resources – The extended duration of construction does not alter the considerations related to Historic and Cultural Resource; therefore, impacts on Historic and Cultural Resources during construction remain SMALL.
- Socioeconomics and Environmental Justice – The extended duration of construction does not alter the considerations related to Socioeconomics and Environmental Justice; therefore, Socioeconomics and Environmental Justice impacts during construction remain SMALL.
- Human Health – The extended duration of construction does not alter the considerations related to nonradiological and radiological human health; therefore, Human Health impacts during construction remain SMALL.
- Nonradiological Waste – The extended duration of construction does not alter the considerations related to nonradiological waste; therefore, Nonradiological Waste Management impacts during construction remain SMALL.
- Uranium Fuel Cycle and Radiological Waste Management – The extended duration of construction does not alter the considerations related to the Uranium Fuel Cycle and Radiological Waste Management; therefore, the Uranium Fuel Cycle and Radiological Waste Management impacts remain SMALL.
- Transportation of Radioactive Material – The extended duration of construction does not alter considerations related to transportation of radioactive material; therefore, the Transportation impacts remain SMALL.
- Accidents – The extended duration of construction does not alter considerations related to accidents; therefore, Accident impacts remain SMALL.

5 REFERENCES

1. Letter, Nuclear Regulatory Commission to Kairos Power LLC, “Kairos Power LLC – Issuance of Construction Permit for Hermes Test Reactor,” December 14, 2023 (ML23338A254).
2. Nuclear Regulatory Commission. “Environmental Impact Statement for the Construction Permit for the Kairos Hermes Test Reactor – Final Report,” NUREG-2263, August 2023 (ML23214A269).